

AMENDMENTS TO THE DRAWINGS

Attached is one drawing sheet showing the changes made to Fig. 1, and one replacement sheet for review and approval by the Examiner.

Attachments: 1 Annotated Sheet Showing Changes Made

1 Replacement Sheet

REMARKS

I. Status of the Claims and the Rejections

Claims 1-10 are pending in this application. The Office Action included a rejection of all pending claims. The Office Action also identified a number of objections to the drawing and the specification. More particularly, the drawing was objected to for including reference characters not mentioned in the description. The specification was objected to for missing headings and inconsistencies between the drawing and the specification. Applicants have amended the drawing and specification, as Examiner has suggested, to overcome these objections and to add consistency to the claims. The Abstract has also been amended to make it more consistent with the specification and the claims. Applicants respectfully request that the objections to the drawing and the specification now be withdrawn.

The Office Action also included a number of claim objections for informalities based on reference characters and language used in the claims. Applicants have amended claims 1-10 to remove all reference characters and "characterized" language. Applicants respectfully request that the objections to claims 1-10 now be withdrawn.

Claims 1-5 and 8-10 were rejected under 35 U.S.C. §112 for indefiniteness because the recitations "sites remote from passengers" and "propulsion fuel air" were allegedly unclear. Applicant has amended claims 1-5 and 8-10 to remove the recitations of a freight component and modify "propulsion fuel air" to "engine bleed air," thereby removing any indefiniteness. Applicants respectfully request that the rejection of claims 1-5 and 8-10 now be withdrawn.

Substantively, claims 1-8 and 10 were rejected under 35 U.S.C. §102 for being anticipated by United Kingdom Patent No. GB 954,342 ("GB '342"). Claim 9 was rejected under

35 U.S.C. §103(a) for obviousness based on GB '342 in view of Scheffler et al U.S. Patent No. 6,306,032 ("Scheffler '032"). Applicants have amended claims 1-10, and added new claims 11 and 12. Applicants respectfully request reconsideration of the rejections.

II. Claims 1-8 and 10 are Novel

A. The Claims

Independent claim 1 is directed to a method for air-conditioning a passenger cabin of an aircraft. Claim 1 has been amended to recite "when cooling is required, air is introduced into the passenger cabin at sites remote from passengers, said introduced air being at a lower temperature than air introduced into the passenger cabin at sites close to passengers." Claims 2-5 depend from claim 1 and recite unique combinations of features of the air-conditioning method.

Independent claim 6 recites a line system for air-conditioning a passenger cabin of an aircraft. The line system includes "at least a first line branching that leads to a first region of the passenger cabin remote from passengers [and] at least a second line branching that leads to a second region of the passenger cabin, said second region closer to passengers than said first region." The line system also includes "means for conveying air at different temperatures simultaneously through the first and second line branchings, wherein, when cooling is required, said conveying means feeds air through the first line branching, said air being at a lower temperature than air fed through the second line branching." Claims 7, 8, and 10 depend from claim 6 and recite unique combinations of features for the line system.

B. The Deficiencies of the Cited Prior Art

GB '342 is directed to an aircraft heating system. As shown in FIGS. 1 and 2, the aircraft heating system delivers hot bleed air from an aircraft engine (1) through ducts (3, 4) to a valve (5) that maintains a constant flow rate of bleed air. This constant flow rate of bleed air is

then split into parallel ducts (6, 7) controlled by separate valves (8, 9). The first duct (6) leads to jet pumps (12) located in a compartment (13) below the floor (14) of the aircraft. The jet pumps (12) deliver a mixture of the bleed air from the duct (6) and recirculating air from the compartment (13) to a manifold (15) in fluid communication with the compartment (13) and side vents (21) leading to the upper compartment. The second duct (7) leads to an air conditioning unit (22) and an overhead manifold (26) in the upper compartment, the overhead manifold (26) having a plurality of distribution nozzles (27) for delivering the bleed air from duct (7) into the upper compartment. As the amount of bleed air flowing into the parallel ducts (6, 7) remains constant, the valves (8, 9) can be selectively opened and closed to divert all or a portion of the bleed air into the upper compartment and the compartment (13) below the floor (14) (*see* pg. 2, ll. 63-112).

The Office Action states that GB '342 discloses the method of claim 1, including "introducing air at sites remote from passengers (e.g., in the upper region of the aircraft cabin 13, served by air distribution nozzles 27) that is at a temperature different from air that is introduced at sites closer to passengers (e.g., near the floor 14 of the aircraft cabin, served by floor airflow openings 20 and side vents 21)" (*see* Office Action, pg. 6). The Office Action states that GB '342 discloses the line system of claim 6, including "means (e.g., air conditioning unit 22, bypass valve 24, and reverse acting valve 9) are provided in order to feed air at different temperatures simultaneously through the first and second line branching (7, 6)" (*see* Office Action, pg. 8). Applicants disagree.

Nonetheless, claims 1 and 6 have been amended to recite novel structure. Claims 1 and 6 recite that when cooling is required, the air delivered to sites (a first region) remote from passengers is at a lower temperature than the air delivered to sites (a second region) close to

passengers. This temperature difference is delivered "in order to prevent the passengers from being subjected to an unpleasantly cold stream of air, with possibly the accompanying danger of catching cold" (*see para. [0020]*). Consequently, it is clear that the independent claims 1 and 6 are directed to the cooling of a passenger cabin. In contrast, GB '342 is titled "Aircraft Heating System" and describes a system that delivers a constant quantity of hot bleed air into the compartments of an aircraft. The hot bleed air must be delivered at least through either duct (6) leading to the upper compartment through side vents (21) or duct (7) leading directly to the upper compartment through overhead manifold (26). The GB '342 system is not directed to cooling a passenger cabin in an aircraft and therefore fails to anticipate the features of independent claims 1 and 6.

Additionally, GB '342 teaches away from delivering air at sites remote from passengers at a lower temperature than at sites closer to passengers. GB '342 explains that when "there is to be no heating of the aircraft or compartment floor, valve (8) will be closed thereby directing all air through duct (7) into the overhead system" (*see pg. 2, ll. 66-69*). Thus, the temperature of the air delivered through the overhead manifold (26), which the Office Action defines as remote from the passengers, must necessarily be higher than the merely recirculated air delivered to the side vents (21) closer to the passengers. This is precisely opposite to the claim recitation that the air delivered remote from the passengers is at a lower temperature than air delivered close to the passengers.

To the extent that it could be argued that the entirety of the hot bleed air could be directed through an air conditioner and then cooled before delivery to the overhead manifold, that operation of GB '342 would be inefficient and counterintuitive. Adding such an air conditioner would significantly increase the overall weight of the aircraft, which is highly

undesirable. Furthermore, one of ordinary skill in the art would consider such a modification to GB '342 to be a waste of effort, because the added air conditioner would have to remove much more heat energy from the constant flow of hot bleed air than it would have to remove from the recirculating air from the passenger cabin. Thus, to operate GB '342 so as to cool a passenger compartment and deliver air remote from passengers at a cooler temperature than air closer to passengers, the GB '342 system would have to be operated in an inefficient and non-intuitive manner. Such reconstruction of the prior art is not appropriate.

For at least these reasons, claims 1 and 6 are allowable over GB '342. Dependent claims 2-5, 7, 8, and 10 depend from claims 1 and 6 and recite unique combinations of features also not anticipated by the cited reference. Applicants respectfully request that the rejection of claims 1-8 and 10 now be withdrawn.

III. Claim 9 is Non-Obvious

A. The Claim

Claim 9 depends from independent claim 6, which recites a line system for air conditioning an aircraft as discussed above. Claim 9 further states that the "second line branching is connected to at least one feed line for temperature-controlled fresh air and recirculated air, and to at least one feed line for hot engine bleed air."

B. The Deficiencies of the Cited Prior Art

This rejection of claim 9 depends on the prior rejection of independent claim 6 by GB '342. Claim 9 is allowable over GB '342 for at least the same reasons provided above for claim 6. The Office Action also concedes that GB '342 fails to disclose that the second duct (7) is connected to a feed line for fresh air and recirculated air. The Office Action states that Scheffler '032 teaches an air conditioning system for a plurality of zones in an aircraft having

feed lines for hot bleed air, and that it would have been obvious to modify the GB '342 system in a similar fashion to arrive at the system of claim 9 (*see* Office Action, pg. 10).

However, Scheffler '032 is expressly directed to "air conditioning the underfloor or below-deck areas of a passenger aircraft" (see Col. 1, ll. 11-13). A person of ordinary skill in the art would not have combined the Scheffler '032 system with the GB '342 system because Scheffler '032 is not directed to air conditioning a passenger cabin of an aircraft as currently claimed. Even if Scheffler '032 were combined with GB '342, Scheffler '032 fails to overcome the deficiencies of GB '342 with respect to claim 6. The modified GB '342 system would continue to fail to deliver air remote from passengers at a temperature lower than air delivered closer to passengers. For at least these reasons, claim 9 is allowable over the cited references. Applicant respectfully requests that the rejection of claim 9 now be withdrawn.

IV. New Claims

Claims 11 and 12 have been added in this response. Claim 11 depends from independent claim 1 and further recites that "the introduced air contains an adjustable amount of engine bleed air, the adjustable amount of engine bleed air determined by temperature measurements of the passenger cabin." Claim 12 depends from independent claim 6 and further recites a valve for adjusting the amount of engine bleed air delivered to the passenger cabin. Each of these claims is fully supported in the original specification at para. [0021] and [0022]. Claims 11 and 12 clearly define over GB '342, which discloses a system "arranged to receive a constant mass flow of [hot bleed] air which is ducted to both the floor heating distribution duct and the compartment overhead distribution duct" (*see* pg. 1, ll. 80-84 and pg. 2, ll. 1-13). The constant flow of hot bleed air is precisely the opposite of the adjustable engine bleed air amount

claimed in claims 11 and 12. Thus, claims 11 and 12 are allowable over the currently cited references and Applicants request that claims 11 and 12 be allowed without delay.

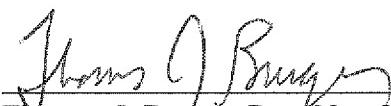
V. Conclusion

Based on the amendments to the claims and these remarks, Applicants respectfully assert that this case is in condition for allowance, and respectfully request a notice to that effect. If the Examiner believes any issue requires further discussion, the Examiner is respectfully asked to telephone the undersigned attorney so that the matter may be promptly resolved.

Applicants do not believe that any fee is due in connection with this submission. However, if any additional fees are necessary to complete this communication, the Commissioner may consider this to be a request for such and charge any necessary fees to Deposit Account No. 23-3000.

Respectfully submitted,

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Title: METHOD AND DEVICE FOR THE AIR-CONDITIONING OF

A FREIGHT COMPARTMENT OF A CABIN OF AN AIRCRAFT

First Named Inventor: ELMERS, JEN

Atty Docket No: WUE-48-116

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ANNOTATED SHEET

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